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Education is in the midst of a modernizing revolution, and standard texts and old-fashioned teachers are no longer adequate as the sole sources of information. Modern teachers must be constantly trained and retrained; educational television (ETV) not only enables them to learn with their pupils, but also provides them and the increasing numbers of auxiliary teacher aides with in-service training. Today, about two-thirds of the nation's students are covered by ETV which is helping to overcome the lag in education by bringing specialists to the classroom and by using a multisensory approach to learning. Although studies indicate that ETV has been used with greater success in elementary schools, lack of effective use at higher levels is probably a reflection of teacher attitudes. Since the needs of school districts vary, the same programs may be used in several ways. Many programs may be regional in nature, such as those about local history and geography, while others will be of a more general nature and therefore require avenues of wider distribution. In using ETV, the schools must understand the community's educational expectations. Administration should be through state ETV commissions which are able to represent the needs of elementary schools, high schools, colleges, and the community at large. (CG)

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Prepared for the Feasibility Study of Inter-Institutional Television • University of Minnesota, Minneapolis, Minnesota

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THE RELATIONSHIP OF ELEMENTARY AND SECONDARY EDUCATION TO A STATE COMMUNICATIONS NETWORK SERVING HIGHER EDUCATION

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The technological advances which characterize American industry, agriculture, and commerce have not bypassed the broad field of education. Today our most important enterprise, that of educating children and youth to become active, intelligent, and competent citizens, finds itself in the midst of a revolution. New approaches to learning, new instructional techniques and procedures, new organizational patterns, and a vast array of new instructional media characterize the modern school.

The "little red schoolhouse" and the teacher who was all things to all students are rapidly disappearing. That nostalgic period when "the teacher on one end of a log and the pupil on the other" provided the optimum educational experience is gone forever along with the pot-bellied stove, the deep-well hand pump, and the tin dipper which were part of the rural school of a bygone day.

Today those who are charged with the responsibility of educating our children and youth face unprecedented challenges. Modern research and development programs, along

with advanced hardware for data processing, storage, and retrieval, are supplying us with new knowledge and the correction or verification of old knowledge at a faster rate than man is capable of absorbing it. The schools are confronted with the Herculean task of attempting to incorporate into the school curriculum the essential facts emerging from this explosion of knowledge in the midst of which we find ourselves. No longer can we depend upon standard textbooks, in many fields obsolete by the time of publication and distribution, as the sole source of information. We know only too well that many of the "laws" and "principles" and "facts" of a few decades ago are now only artifacts of man's long struggle to understand the world in which he lives. Increasingly we recognize that nearly all concepts must be preceded by the phrase, "At this point in time and space, we believe . . ." We have traveled far from Kitty Hawk to Cape Kennedy.

It is true in a sense that while industry and business have responded dramatically to modern technological forces, education and instructional technology have lagged far behind. Five years ago John Ivey, Jr. charged that schools and colleges had "not even scratched the surface in bringing into the educational process the technological revolution in communication which is shaking the very roots of modern society."

As we view the scene in 1966, however, there is every indication that the lag is being overcome. The story of the progress made in the expanded use of ETV is a dramatic one. In 1953, the first educational program was broadcast from Houston, Texas. Today, 13 years later, according to the Office of Education, U. S. Department of Health, Education, and Welfare, approximately two-thirds of the students enrolled in the nation's schools and colleges will be in areas covered by educational television. In sharp contrast to the situation in 1953 and 1954 when there were less than a dozen local ETV stations, there were as of September, 1966, a total of 126 either on the air or scheduled to be on the air during the current school year. Presently 37 states have enacted ETV legislation, 32 states have commissions, boards or authorities related to educational television, and as a strong indication of the current trend, 25 of the states have state-wide networks authorized, under construction, or in operation. This great expansion in the development of educational television facilities bears evidence to the fact that ETV must be meeting needs in the nation's elementary and secondary schools.

Any consideration of the place of television in the elementary and secondary schools must be based upon a recognition of two basic factors, one positive and the other,

in a sense, limiting:

First, experience already indicates that television is an effective communication medium. One need only consider the impact of commercial television upon our culture to find ample evidence of this. That its audio-visual presentation influences behavior--for better or worse--is no longer moot, at least in the minds of advertisers.

Educational or instructional television, as a communication medium has some unique characteristics. It can capture and bring to the classroom, both in sight and sound, a wide variety and a large number of "slices of life" pertinent to any given teaching-learning situation. It gives each student an over-the-shoulder view of a demonstration or a bit of realia. It can put every student's eye to the lens of the same microscope and focus it on the same magnified phenomena. It can muster and bring to the classroom a battery of experts to function as resource people which would not be available under any other circumstances. Educational television can bring to the young citizens in our schools the State Legislature in action. They can see as though they sat in the visitor's gallery the debates and the deliberative processes involved in lawmaking. The study of current events can be truly current. Every child, even though attending a small rural school

isolated and remote, can visit the urban, industrial centers, explore the great museums and art galleries, see and listen to the finest symphonies and operas, become acquainted with the larger world of work of which he will soon become a part. And equally important, educational television can provide in every classroom a master teacher or team of teachers to meet the needs of that classroom. It can augment the efforts of the elementary teacher in the traditional self-contained class by bringing to pupils the specialists in music or art or foreign language or science that are often so sorely needed to provide a comprehensive program. Instructional television, regardless of the area or level where it is employed, has the unique facility of providing the multisensory approach so essential to learning. It is generally accepted today that children learn different things in different ways. The medium can utilize all of the resources of sight and sound.

Second, a television facility is only a communication channel. It is not in itself good or bad. Its contribution to a student's educational experience is determined by the content that is communicated, by the methods and techniques employed in the presentation of that content, and by the relationship of the total program to the educational task confronting the student. What comes out on the

classroom screen is only as good as what goes into the camera. (The term "gigo" -- garbage in, garbage out -- used by the data processors, has a similar application with reference to television.)

Any adequate evaluation of the place of educational television in the classroom must focus on the question, "What contribution can ETV make to learning?" One of the major obstacles to the utilization of classroom television resulted from early attempts on the part of many to equate the classroom teacher and television. There seems still to be on the part of many a tendency to regard the major issue as being "Can television replace the classroom teacher?" This is a confusion of issues. The real questions are: Can television broaden and enrich the learning experiences available to children and youth? Can the medium be used to liberate the teacher from that lowest level of teaching, the dissemination of information, leaving him free to devote himself to the creative aspects of teaching which depend so largely on the direct face-to-face relationships of teacher and pupil?

As has been frequently pointed out, there is a dearth of research data in published journals concerning the effectiveness of instructional television in elementary and secondary schools. However, there is data to be found in the reports of various school systems, the Ford Foundation,

The U. S. Office of Education, the Fund for the Advancement of Education, and others. Wilbur Schramm, Director of the Institute for Communication Research, Stanford University, has given us perhaps the most helpful summary of these fugitive reports. After a review of some four hundred comparisons of instructional television teaching and traditional classroom teaching, he draws a number of conclusions which are helpful to us in this context.

Schramm's analysis of the studies on learning from television are summed up in the following statements: "Instructional television is at least as effective as ordinary classroom instruction, when the results are measured by the usual final examinations or by standardized tests made by testing bureaus . . . employing the usual tests that schools use to measure the progress of their students, we can say with considerable confidence that in 65% of a very large number of comparisons, between televised and classroom teaching there is no significant difference. In 21%, students learned significantly more; in 14% they learned significantly less from television." (Educational Television, the Next Ten Years, Stanford University, Institute for Curriculum Research, p. 53)

It is relevant to our purpose here in considering the place of ETV in the elementary and secondary schools to note that the studies clearly indicate that instructional

television has been used with considerably greater success in the elementary schools than in high schools or colleges. However, there seems to be no concrete evidence that the decreasing effectiveness is related either to the maturity of students or to innate limitations of the medium. It has been surmised frequently, but without supporting evidence, that the limitations at the upper levels were to a major degree a reflection of the attitude of teachers at those levels toward utilizing television in their classes.

Programing for elementary and secondary schools on a state-wide basis must be based upon a careful analysis of needs. This must involve consideration of such questions as these: What programing is needed to broaden, deepen, and enrich courses being taught in the elementary and secondary schools? Are there subject fields in which it is desirable that the total teaching task be done by a television teacher? Are there areas in which a "systems" approach is desirable with instructional television making its contribution as a supplement to programed instruction, films and filmstrips, texts and reference materials, records and tapes, etc.? The availability of highly competent teachers, the size of the school, the enrollment in classes, and the availability of resource personnel within the community must all be considered in the analysis of the need for particular kinds of programing. In short, it must be recognized that different

school interests may well use the same programs in different ways. And furthermore, that the needs of school districts will vary in relation to the total community learning environment of which each individual school is a part.

These varying needs can be illustrated with a number of specific examples. The program "Roundabout" currently being presented by WETA, in Washington, D. C., is planned to meet the needs of the "economically deprived" and "culturally different" in that metropolitan area. It provides programs pointed toward expanding the child's horizons and developing a readiness for learning that would be almost impossible through any other media. This program meets the particular need of a region.

A completely different type of program but one which also indicates the meeting of a regional need is the series, "Explorations with Bucky Beaver." This series, produced by the Oregon State Board of Education, is presented for fourth-grade pupils. Its purpose, summarized briefly, is to develop an interest, understanding, and appreciation of Pacific Northwest history and geography. It also stresses map and globe skills.

In nearly all states there is an emphasis on regional history and geography. There seems to be a general need for this type of programing at both the elementary and secondary level because of the difficulty in obtaining adequate basic and supplementary materials on a regional basis.

No evaluation of instructional television in the elementary and secondary schools can disregard its impact upon teachers and administrators as a technique of inservice education. Teacher competency today must be evaluated in terms quite different from those of a decade ago. The time when a teacher could go to school, earn a certificate or a diploma, and be adequately prepared to teach for the rest of his professional career is past. The day of the "life certificate" is past. Teacher education in these changing times must be a continuous process extending throughout a teacher's service years. The constantly growing body of knowledge about our environment, the research findings on teaching and learning, the changing demands of our society, the ever-accelerating rate of technological development, the new concepts of the role of the teacher as a member of an instructional team, the new approaches to the disciplines as exemplified in the "new mathematics" -- and others which any educator could add -- bear evidence to the fact that teachers and administrators, like industrial workers, must be constantly trained and retrained. Obsolete methods and techniques are not confined to the industrial plant or the business office. They are too often found in classrooms at all levels of instruction from the nursery school to the university.

It has been the experience of those school districts using instructional television that teachers learn with

their pupils. They learn not only the new content and the new skills which they need; they acquire also the techniques and methods dictated by current research in teaching and learning. At the same time, teachers using instructional television in their classes frequently need assistance in handling the televised content.

In recognition of the general need for increased emphasis on the inservice education needs of elementary and secondary teachers, many ETV stations regularly schedule during the after-school hours, special series geared to the program content used in the in-school programs. There are many excellent examples.

In connection with the WETA program, "Roundabout," mentioned earlier, there is a concurrent series of 26 half-hour programs for the teachers of culturally disadvantaged. The purpose is to assist them not only in utilizing the TV program effectively, but also to provide "inservice training for those working primarily with children and families in metropolitan poverty areas." The Portland (Oregon) Public schools and the schools of the Seattle metropolitan area (Channel 9, KCTS), to mention only two of many, regularly schedule inservice programs for after-school and evening-hour viewing. These programs run the gamut of the elementary and secondary instructional areas: mathematics, science, social studies, English, music, art, and foreign languages.

But perhaps more significant, and in keeping with modern trends, is the fact that there is an increasing emphasis on such general areas as inquiry training, utilization of the new instructional media, making effective use of paraprofessionals in the classroom, learning problems of the culturally disadvantaged, etc.

The advantage of utilizing television to meet the needs of elementary and secondary teachers and administrators is that in the broadcasting studio all of the resources needed by a team of specialists can be brought together--demonstration materials, all the media essential to a multisensory approach, and laboratory equipment including items seldom available to teachers in the public school except in summer-school classes, and only rarely then.

There is another area of need related to the use of ETV in inservice education. Many elementary and secondary schools are today making extensive use of paraprofessionals or auxiliary aides in the classroom to relieve the teacher of the nonteaching assignments which seem to have increasingly encroached upon her time. The auxiliary personnel are usually well educated in their own areas of specialization or activity. But they have had relatively little experience in relating their training to education and, more specifically, to the classroom. They frequently

assist the schools on a part-time basis, supervising playgrounds and lunchrooms, handling clerical details related to collecting lunch money and checking attendance, directing the loading of school buses, assisting in the preparation of teaching aids, and a host of others.

These auxiliary personnel need specific training as it relates to the school environment in such areas as organizing group activities, first aid, safety, liability laws, basic game skills, interpersonal relations, and at least an introduction to child growth and development. To qualify for a part-time assignment, these aides will not go to summer school or take the traditional extension courses, assuming that such courses were available.

Educational television holds great promise in meeting this new need for the inservice education of the paraprofessional group working in elementary and secondary schools. The programs can be brought to them at home; they can be designed to meet specific needs; they can be provided at convenient hours; they can be related to specific tasks and assignments. Unfortunately, almost nothing has been done to date to develop such needed programs.

In evaluating the place of open-circuit educational television in the common schools, no administrator can overlook the valuable public-information service which it

performs. Communication between home and school are imperative in a successful program. The school must know and understand the community's expectations with reference to the goals of education. But even more important, the community must know and understand how the schools are attempting to achieve those goals or objectives.

When parents or patrons by a twist of the dial can observe foreign language instruction utilizing an audio-linqual approach both understanding and appreciation develop. They begin to see the advantages over the "read and translate" of their own school days. As parents follow the sequential development of a "modern math" program, they soon learn not only the basic differences between the old and the new, but also the rationale upon which the new approaches to the discipline are based. As they view the master teacher opening to children and youth the glorious world of music and art, the inspiration and subtleties of great literature and the wonders of the physical and biological sciences, an appreciation of the task of the school grows.

Relative to the use of ETV in the public schools is another important factor. There must be a realistic appraisal of the problems of program scheduling whenever more than a single school district is involved in the utilization of educational television. Daily schedules vary greatly, especially at the secondary level. The length of periods, the beginning

of the school day, the dismissal time, the amount of time allowed between periods for passing to classes, the number and length of lunch periods, and special arrangements made to accommodate the program to school-bus schedules are all variables which must be considered. The problem is currently being aggravated by the growing trend toward flexible scheduling with pupils individually scheduled into a program involving up to 26 or 28 modules or combinations of modules varying from 15 minutes up to two hours. This problem of building a daily broadcast schedule which can be adapted to individual schools becomes increasingly difficult as the number of schools utilizing the program increases. With the establishment of a state-wide network the problem is complex.

With current advances in technology, however, there is great promise that this problem can be solved. The development of relatively low-cost videotape recorders will enable local schools to record programs off the state or regional networks and rebroadcast them locally at the times appropriate to the school's daily schedule.

Until such time as video-tape recorders are available, most educational networks will probably have to continue the present common practice of airing the same programs several times during the day or week to enable local districts to utilize them.

In planning and programing instructional programs for classroom viewing, there are many sources to which an ETV station or a network of stations may turn. It is true that any state-wide or regional network would probably want to produce many programs planned to meet the peculiar needs of the schools it served. A typical example might be a program series providing either total teaching or enrichment and resource material on a state's economic growth and development--or on the functioning of the state's government. Station WGSF, in Newark, Ohio, just beginning local originations, is presenting a series on early Newark history, "an audio and slide presentation."

On the other hand, there are many instances where it is not economically feasible to produce elementary and secondary programs locally or on a state-wide basis. Excellent video tapes are available for rental or lease from a number of sources.

One of the major sources is the National Educational Television Network which makes a wide variety of programs available. The National Center for School and College Television, Bloomington, Indiana, and the Great Plains Regional Instructional Television Library, Lincoln, Nebraska, both distribute video-taped courses on a national basis. Each year new program series along with the necessary

teacher's guides or manuals become available.

In addition, the various state ETV networks are continually producing new courses which are added to the pool of resources upon which others may draw. Many of the ETV stations, not associated in a state-wide network, also produce excellent program series which are available for rental or lease to the networks. An example of such an arrangement is seen in the announcement by the Ohio Educational Television Network, September 20, 1966, that the program "TV Kindergarten" produced by KNME, in Albuquerque, New Mexico, will be broadcast in the fall of 1966 on all eight stations of the Ohio ETV Network.

The development of an ETV operational format that will serve all elements of the educational system within a state presents major problems, desirable as the end result may be. Many of the problems are technical ones relating to the type of communications network which is to be established. And the type of communications network may be influenced by topographical features within a state since these largely determine the grade A and B viewing areas.

It seems essential in attempting to recommend an operational network format that the following proposals should be considered:

1. Each of the <u>major</u> transmitting stations should

have complete studio facilities for program production. Unless each can originate programs it is impossible to take full advantage of the resources available on the various campuses and in the major population centers.

2. Institutions of higher education should be interconnected--probably by microwave--in order that they may receive programs from one another. Until such time as microwave interconnections can be established, video-taped programs might be exchanged among the institutions of higher education and rebroadcast from local transmitters.
3. In those areas of the state which lie outside the range of the originating stations, translators should be installed to carry the signal to the schools and colleges.

Such an arrangement would meet many of the needs of the institutions of higher education. It would enable each to utilize the outstanding resources available on other campuses. Outstanding professors in the various fields, regardless of the institution with which they were associated, might through the medium of television present lectures or demonstrations on a half-dozen campuses simultaneously. This has obvious advantages.

However, such an arrangement does not necessarily meet

the needs of the elementary and secondary schools. An examination of programs being used in the schools indicates that with a few notable exceptions the outstanding ones are planned by common school personnel and for the most part the television teacher or team of teachers is from elementary or secondary classrooms. Therefore, it becomes obvious that some of the major transmitting stations must have a close association and working relationship with common school personnel. This is essential if educational needs are to be translated into sound programing.

The State of Ohio in establishing its state-wide educational television network seems to have largely resolved the problem of meeting the needs of both the common schools and the institutions of higher education by providing program originating facilities for both types of institutions. There, currently, as a part of the first phase in a long-range developmental program, major transmitting facilities are located on the campuses of Ohio State University, Miami University, Ohio University, and Bowling Green State University. Similar facilities are operated by the Greater Cincinnati Television Educational Foundation, the Greater Toledo ETV Foundation, the Educational Television Association of Metropolitan Cleveland, and the Newark Board of

Education. Generally speaking, there is a greater emphasis on programing for elementary and secondary schools at the stations in Cincinnati, Toledo, Cleveland, and Newark. The long-range program provides for the establishment of additional originating stations in Akron, Dayton, and Kent. As the final step, approximately twenty transmitting stations, with microwave interconnections, will relay the programs from the major originating stations to all areas throughout the state.

The Ohio long-range program would seem to be the most satisfactory type of state-wide network currently proposed or in operation.

There is always, of course, the question of administration. Is the policy-determining function to be vested in a state educational television commission as in Ohio and many other states, or is it to be given to the state board of education with the actual administration placed in the hands of the state department of education as in Oregon?

It would seem that any decision regarding administration must be made on the basis of which of the two plans will result in the most representative body. Educational television must involve the elementary schools if it is to provide the needed instructional services. It must also

involve a variety of community interests and groups because their needs must also be met through an assortment of adult programs. And the institutions of higher education must be involved because they have their own instructional needs and, in addition, must provide many of the resources essential to programing for the other two major groups.

The writer feels that the administrative authority should be vested in the state ETV commission because this group, through wise appointments, can effectively encompass the needs and interests of all three major groups.

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